THE USE OF CONFIDENTIAL INSTRUCTOR RATINGS FOR THE PREDICTION OF SUCCESS IN NAVAL UNDERGRADUATE PILOT TRAINING

Wayne L. Waag, et al

Naval Aerospace Medical Research Laboratory
Pensacola, Florida

7 February 1973

NAMRL - 1175

THE USE OF CONFIDENTIAL INSTRUCTOR RATINGS FOR THE PREDICTION OF SUCCESS IN NAVAL UNDERGRADUATE PILOT TRAINING

Wayne L. Waag, LT Richard H. Shannon, MSC, USN, and Rosalie K. Ambler

7 February 1973

NAVAL AEROSPACE MEDICAL RESEARCH LABORATORY
PENSACOLA FLORIDA

Unclassified
Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author)
Naval Aerospace Medical Research Laboratory
Naval Aerospace Medical Institute
Naval Aerospace and Regional Medical Center
Pensacola, Florida 32512

2a. REPORT SECURITY CLASSIFICATION
Unclassified

2b. GROUP

3. REPORT TITLE
THE USE OF CONFIDENTIAL INSTRUCTOR RATINGS FOR THE PREDICTION OF SUCCESS IN NAVAL UNDERGRADUATE PILOT TRAINING.

4. DESCRIPTIVE NOTES *(Type of report and inclusive dates)*

5. AUTHOR(S) *(First name, middle initial, last name)*
Wayne L. Waag, Ph.D.,
Richard H. Shannon, LT MSC USN,
and Roudie K. Ambler, M.S.

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
7 February 1973	16	4

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
b. PROJECT NO. MF51.524.002.5013.DX5X	NAMRL - 1175
c.	9b. OTHER REPORT NO(S) *(Any other numbers that may be assigned this report)*
d.	.7

10. DISTRIBUTION STATEMENT
Approved for public release; distribution unlimited.

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY

13. ABSTRACT

Previous investigations have reported significant relationships between confidential instructor ratings in early primary phase and later success in Naval flight training. Such ratings were found to increase significantly the validities derived solely from selection test scores. However, such findings do not guarantee that confidential ratings would augment the validities derived from the combined array of selection and early training variables which are used in the current Student Pilot Prediction System. The purpose of the present study was to determine whether such confidential ratings provided non-redundant information which would increase the predictive value of the present system.

The results clearly indicated that confidential ratings obtained from Primary flight instructors provided information relating to the student's probability of receiving his wings. Such ratings were found to significantly increase the predictive validities derived from the variables which are used currently in the Student Pilot Prediction System. Such findings suggest that these confidential evaluations provide additional information beyond that which is reflected in the grades he assigns.

It is recommended that confidential instructor ratings be implemented on a permanent basis in the presolo stage. The present Student Pilot Prediction System should be revised to incorporate this information.

I a

DD FORM 1 NOV 65 1473 (PAGE 1)
S/N 0101-807-6801

Unclassified
Security Classification

14 KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Pilot Performance Measurement						
Instructor Ratings						
Aviation Training						
Secondary Selection						

I b

SUMMARY PAGE

PROBLEM

Previous investigations have reported significant relationships between confidential instructor ratings in early primary phase and later success in Naval flight training. Such ratings were found to increase significantly the validities derived solely from selection test scores. However, such findings do not guarantee that confidential ratings would augment the validities derived from the combined array of selection and early training variables which are used in the current Student Pilot Prediction System. The purpose of the present study was to determine whether such confidential ratings provided non-redundant information which would increase the predictive value of the present system.

FINDINGS

The results clearly indicated that confidential ratings obtained from Primary flight instructors provided information relating to the student's probability of receiving his wings. Such ratings were found to significantly increase the predictive validities derived from the variables which are used currently in the Student Pilot Prediction System. Such findings suggest that these confidential evaluations provide additional information beyond that which is reflected in the grades he assigns.

RECOMMENDATIONS

It is recommended that confidential instructor ratings be implemented on a permanent basis in the presolo stage. The present Student Pilot Prediction System should be revised to incorporate this information.

ACKNOWLEDGEMENTS

Acknowledgement is given to John Burd for his contribution to the development and implementation of the questionnaire used in this investigation.

Approved for public release; distribution unlimited.

THE USE OF CONFIDENTIAL INSTRUCTOR RATINGS FOR THE PREDICTION OF SUCCESS IN NAVAL UNDERGRADUATE PILOT TRAINING

Wayne L. Waag, Richard H. Shannon, and Rosalie K. Ambler

Bureau of Medicine and Surgery
MF51.524.002.5012 DX5X.7

Approved by

Ashton Graybiel, M.D.
Assistant for Scientific Programs

Released by

Captain N. W. Allebach, MC, USN
Officer in Charge

7 February 1973

Naval Aerospace Medical Research Laboratory
Naval Aerospace Medical Institute
Naval Aerospace and Regional Medical Center
Pensacola, Florida 32512

I C

INTRODUCTION

The flight instructor is required to serve a dual function. Although his principle duty is to teach students to fly, he must also evaluate their progress for the record. Such evaluations are reflected in grades which become a permanent part of the student's flight jacket and are subject to the scrutiny of both the training command and the student. As a result of grading standards set by the training command and subtle pressures involved in face-to-face evaluations, it is possible that an instructor's actual opinion regarding a student's progress may not be completely reflected in the grades he assigns. Consequently, the utilization of confidential instructor opinions may add significantly to the information available from assigned grades.

In an early study, Martoccia and Nelson (4) compared actual flight grades and expressed instructor ratings as predictors of later success in Basic training. For one item concerning the likelihood of the student receiving his wings, correlations ranging from .26 to .33 were reported. For the actual grades, the reported $\underline{r}$ was only .17. In a more recent study, Berkshire and Ambler (2) reported an $\underline{r}$ of .35 between instructor predictions and attrition. Such ratings were obtained for a sample of students receiving a series of indoctrination flights prior to their academic training. The addition of these instructor opinions were found to increase significantly the predictive validities derived from the Aviation Qualification Test (AQT) and the Flight Aptitude Rating (FAR). The multiple $\underline{R}$ was increased from .239 to .388. Such findings indicate that instructor ratings significantly enhance the predictive validities derived solely from selection test scores.

The present Student Pilot Prediction System considers more than just selection test scores. Predictions derived at a given stage of training depend upon a number of indices including previous flight grades, academic grades, military grades, and exemption examinations, as well as the selection test scores (3). If instructor ratings are to yield useful information, it must be demonstrated that they significantly increase the validities of the current prediction system; that is, the addition of such confidential ratings must explain a significant non-redundant amount of the criterion variance. The purpose of the present investigation was to determine if, in fact, the use of instructor ratings would increase significantly the validity of the present Student Pilot Prediction System.

METHOD

At present, different sets of equations have been developed for flight students entering from Aviation Officer Candidate (AOC) sources and Officer Under Instruction (OI) sources. AOCs are procured from the civilian population and most have no prior experience with the military. OIs, on the other hand, have obtained their commission elsewhere before entering the flight program. AOCs must successfully complete Aviation Officer Candidate School before entering ground school training (Environmental Indoctrination). OIs, however, enter directly into ground school. Upon completion of ground school training, students are sent to Primary flight training which consists of two stages, Pre-Solo and Precision.

The Pre-Solo stage of training for most students is the first encounter with flying an aircraft. It is during this period that the student is assigned to a single instructor except for off-wing and check hops. Consequently, the instructor is in the unique position of observing the student's initial reactions to flight as well as the initial progress he makes. In other words, the role of the primary flight instructor should be an excellent vantage point for evaluating the potential success of his students.

Confidential instructor ratings of student pilot performance were obtained for a sample of 1276 student aviators completing Primary Flight Training between July 1969 and December 1970. Specifically, instructors were asked after the 7th or 8th hop to rate their students on each of four questions concerning: 1) the probability of the student obtaining his wings; 2) the student's motivation; 3) the student's headwork; and 4) the student's reaction to stress. The complete questionnaire is presented in Appendix A.

For each student, the following information was obtained: 1) Selection test scores for the Aviation Qualification Test, Mechanical Comprehension Test, Spatial Apperception Test, and Biographical Inventory. All students must qualify on these tests before receiving orders to flight training (1); 2) Mathematics and Physics Exemption test scores administered at the beginning of academic training; 3) Environmental Indoctrination grades including Aviation Physiology, Aerodynamics, and Engineering; 4) Confidential instructor ratings on the four items of the questionnaire; and 5) the Pre-Solo grade. Furthermore, each student was categorized according to: 1) Procurement source--AOC vs OI; 2) Branch of Service--Marine vs Navy; and 3) Criterion of Success-completion vs attrition. For all AOC students, two additional measures were obtained, the Officer-Like Qualities (OLQ) rating, and the Peer Rating. Instructors providing the confidential ratings were categorized according to: 1)

Service--Marine vs Navy; and 2) Experience--SERGRAD[1] vs fleet-experienced. According to these different categories, the total sample of 1276 was broken down as follows: 1) 460 AOCs and 816 OIs; 2) 216 Marine and 1060 Navy; 3) 967 completions and 309 attritions; 4) 148 taught by Marine instructors and 1128 taught by Navy instructors; and 5) 327 taught by fleet-experienced pilots and 949 taught by SERGRADs.

RESULTS

Table I presents a comparison between AOCs and OIs for each of the obtained measures. For most measures yielding a significant difference, the OI group produced better scores. The only exception was the BI. This difference was due to the fact that BI selection standards for AOCs tended at that time to be higher than for OIs. An intercorrelation matrix was then obtained for each sample. These are presented in Appendix B. The Pearson zero-order correlations between each measure and pass-attrite are presented in Table II. It is interesting to note the differences across the two samples. From these correlations, it was apparent that the prediction equations developed for each sample would emphasize different measures.

Three series of regression analyses were then performed for each sample using a forward selection procedure. For Analyses I, the set of potential predictors included all available information up to but not including Primary flight training. Weight reversals were suppressed so that a variable was eliminated if the sign of its beta weight did not coincide with the sign of its zero-order correlation with the criterion. These statistical decisions were consistent with the procedures used to develop the current set of equations for the Student Prediction System (3).

In the second set of analyses, or Analyses II, those variables selected during Analyses I were first forced into the regression equation. Primary flight training variables were then entered into the equation on a sequential basis; that is, in a sequence which simulated the actual availability of information. Consequently, instructor type information was entered first, followed by the confidential ratings, and finally by the Pre-Solo grade. Again weight reversals were suppressed and variables with an F-ratio less than one were excluded.

---

[1]SERGRAD is an acronym for Selected Returned Graduates which identifies instructors who are assigned to instructor duty immediately upon completion of undergraduate pilot training.

Table I

Comparison of Performance Measures Between AOCs and OIs

Performance Measure	Means AOC	Means OI	z Value
Student: Marine vs Navy	- - - -	.314	- - +
Aviation Qualification Test	84.586	86.945	3.726**
Mechanical Comprehension Test	60.379	60.098	.643
Spatial Apperception Test	21.654	21.706	.173
Biographical Inventory	43.396	40.074	4.303**
Math Exemption	38.396	47.039	12.617**
Physics Exemption	38.932	48.787	13.660**
Aviation Physiology	50.963	52.038	2.161*
Aerodynamics	52.094	53.150	1.878
Engineering	51.612	51.777	.295
Officer-Like Qualities	51.392	- - -	- - -
Peer Rating	51.118	- - -	- - -
Instructor: Marine vs Navy	.102	.124	1.185+
Instructor: 1st vs 2nd Tour	.254	.257	.122+
Item 1-Wings	8.589	9.208	3.842**
Item 1-Motivation	9.111	9.658	3.681**
Item 3-Headwork	7.763	8.311	3.351**
Item 4-Stress	7.820	8.516	4.358**
Pre-Solo Grade	3.015	3.027	3.243**
Pass-Attrite	.630	.830	7.645**

** $p < .01$

* $p < .05$

+ These are percentages resulting from coding the 1st category 1, and the 2nd category 0.

Table II

Zero-Order Correlations Between Performance Measures and Pass-Attrite

Performance Measure	AOC Sample	OI Sample
Student: Marine vs Navy	- -	.145**
Aviation Qualification Test	.096*	.039
Mechanical Comprehension Test	.146**	.030
Spatial Apperception Test	.025	.108**
Biographical Inventory	.039	.097**
Math Exemption	.123**	.052
Physics Exemption	.152**	.025
Aviation Physiology	.125**	.075*
Aerodynamics	.156**	.095**
Engineering	.165**	.090**
Officer-Like Qualities	.128**	- -
Peer Rating	.100*	- -
Instructor: Marine vs Navy	-.009	.081*
Instructor: 1st vs 2nd Tour	-.049	.043
Item 1--Wings	.265**	.166**
Item 2--Motivation	.146**	.149**
Item 3--Headwork	.212**	.137**
Item 4--Stress	.202**	.163**
Pre-Solo Grade	.307**	.201**

** $p < .01$
* $p < .05$

Table III presents the results of Analysis II for the AOC sample. As indicated, 5.7% of the criterion variance could be explained by information available prior to Primary flight training. The addition of the instructor rating on item 1 increased the explained variance by 4.6 percentage points, a fairly substantial amount. Finally, upon entering the Pre-Solo grade, an additional 3.3% of the criterion variance was explained. The final equation yielded a multiple R of .369.

Table III

Summary of Regression Analysis II for AOC Sample

Variable Entered	Multiple R	Multiple R2	Increase In R2	F-Ratio For Inclusion
Engineering	.165	.027	.027	12.834
Officer-Like Qualities	.204	.041	.014	6.869
Physics Exemption	.223	.050	.009	3.858
Aerodynamics	.233	.055	.005	2.314
Mechanical Comprehension Test	.238	.057	.002	1.128
Item 1-Wings	.321	.103	.046	23.230
Pre-Solo Grade	.369	.136	.033	17.450

Table IV presents the results of Analysis II for the OI sample. As indicated, 6.0% of the criterion variance could be explained by information available prior to Primary flight training. The addition of instructor information, including the Marine-Navy dichotomy and the ratings on three of the four items, added 3.1% to the explained variance. After entering the Pre-Solo grade, only 1.0% additional criterion variance was explained. The final equation yielded a multiple R of .318.

While these findings indicate that instructor ratings significantly increase the validities of equations confined to "early" predictors, the possibility remained that such increases may have been negligible had the Pre-Solo grade been entered first. To test this possibility an additional set of analyses or Analyses III was performed. All information other than the instructor data was initially forced into the equation regardless of the value of the F-ratio or sign agreement between the beta weights and zero-order correlations. In this manner, the maximum multiple R is obtained. For the AOC sample, the obtained R was .367, which explained 13.5% of the criterion variance. Instructor rating data was then forced into the regression equation, and the multiple R was

Table IV

Summary of Regression Analysis II for AOC Sample

Variable Entered	Multiple R	Multiple R2	Increase in R2	F-Ratio For Inclusion
Student: Marine vs Navy	.145	.021	.021	17.428
Aerodynamics	.205	.042	.021	17.897
Spatial Apperception Test	.222	.049	.007	6.338
Biographical Inventory	.235	.055	.006	4.947
Aviation Physiology	.242	.059	.004	2.840
Engineering	.245	.060	.001	1.237
Instructor: Marine vs Navy	.252	.063	.003	2.843
Item 1-Wings	.296	.087	.024	21.359
Item 2-Motivation	.299	.089	.002	1.632
Item 4-Stress	.302	.091	.002	1.913
Pre-Solo Grade	.318	.101	.010	8.543

increased to .387, which explained 15.0% of the variance. The addition of the instructor information, therefore, explained an additional 1.5% of the total variance.

For the OI sample, the obtained R using all predictors other than instructor data was .302, which explained 9.1% of the criterion variance. The addition of the instructor information increased the R to .330, which explained 10.883% of the variance. The addition of the instructor therefore explained an extra 1.8% of the total variance. For both samples such increases were statistically significant. A comparison of the key increases in explained criterion variance after the introduction of the instructor ratings are presented in Table V for summary purposes.

DISCUSSION

The results of this investigation clearly indicate that confidential ratings obtained from Primary flight instructors provided valuable information which were related to the student's likelihood of receiving his wings. More importantly, such ratings significantly increased the predictive validities derived from information which is currently used in the Student Pilot Prediction System. This indicates that the instructor's confidential evaluations provide additional information beyond that which is reflected in the grades he assigns.

Table V

Comparative Increases in Per Cent of Criterion Variance Explained by Introduction of Instructor Ratings

Student Type	Analyses II*	Analyses III*
AOC	4.6%	1.5%
OI	3.1%	1.8%

*Attention is called to fact that Analyses II utilized only the significant variables from Analyses I while Analyses III forced all variables.

It should be emphasized that the findings of this study are based upon attritions occurring after Pre-Solo Primary training. In addition to the sample of 1276 students completing Pre-Solo, there were 43 students who received ratings, but did not finish Pre-Solo. Had these records been included in the sample, the validities of the instructor ratings would have been increased. However, it was felt that these confidential ratings would be of greater value if they could be shown to predict late attritions during undergraduate training. For this reason, the authors feel these results to be highly encouraging. Such data strongly suggest that the implementation of instructor ratings would significantly enhance the validity of the present prediction system. The greatest strength of these instructor ratings appears to be in the augmentation of the prediction capability of later attrition before the pre-solo stage grade is earned. However, there is enough statistical evidence in the conservative approach of Analysis III to indicate significant augmentation of prediction capability even after the pre-solo grade is earned.

Although the usual replicative cross-validation study has not yet been performed, there are several reasons which support the recommendation that such ratings be considered for implementation. First, the present results do replicate the previous findings that: (1) instructor ratings are significantly related to success in naval air training; and (2) instructor ratings significantly increase the predictive validities derived solely from the selection test scores. Second, the finding of augmentative capability in both the AOC and OI sample may be considered to be similar to the procedure of cross-validation by sample fractionation. Third, the results are based upon a relatively large sample size. For these reasons, consideration for implementation without the usual cross-validation procedures is recommended.

A word of caution seems to be in order, however. The results of this investigation are based upon data obtained as part of an experimental research program. The effects of implementation of such a rating form on a permanent basis are unknown. In the event, however, these ratings became public, it is a reasonable certainty their usefulness would be lost. The value of such ratings derives from the fact that it enables the flight instructor to express his true opinion concerning a student without having to defend his judgment. Unlike the grades he assigns, such confidential ratings would have no direct consequence upon the student. The instructor would not have to defend his evaluation to either the student or the members of a Student Pilot Disposition Board (SPDB). Its value would result entirely from the increased validity of the student's predicted success or failure in the program.

REFERENCES

1. Ambler, R. K. "Selection of Aviation Personnel: Psychological Selection" in U. S. Naval Flight Surgeons Manual, BUMED, Navy Dept., Washington, D. C., 1968, pp 629-635.

2. Berkshire, J. R., & Ambler, R. K. The value of indoctrination flights in the screening and training of naval aviators. Aerospace Medicine, 1963, 34, 420-423.

3. CNATRA Instruction 1610.5E, Prediction of student success in the pilot training program. 22 Mar 1972.

4. Martoccia, C. T., & Nelson, W. H. Comparison of instructor grade and instructor expressed opinion as predictors of student success in naval air flight training. Research Project No. NM 001 108 107 Report No. 3. U. S. Naval School of Aviation Medicine, Pensacola, Florida, 1956.

APPENDIX A

INSTRUCTOR'S RATING

Instructor's name _____

Student's name _____

Jacket number _____

What is the last hop this student completed? _____

Studies have shown that primary flight instructors are in the best possible position to make an early evaluation of an individual student. Such an early assessment would be a valuable addition to the information administrators now have available when evaluating a student. This questionnaire will not be kept in the student's jacket but in a separate file.

Below are four questions for you to answer. The questions are subjective and are difficult to answer definitely. To get an accurate assessment of your opinion please check the line on the continuum which best represents your feeling.

1) IN YOUR OPINION WILL THIS STUDENT GET HIS WINGS?

definite no — probably will — definite yes

2) HOW WELL MOTIVATED IS THIS MAN TO BECOME A NAVAL AVIATOR?

not very — well motivated — extremely well

3) HOW IS THIS STUDENT'S HEADWORK?

poor — good — outstanding headwork

4) HOW MUCH CONTROL DOES THIS MAN HAVE WHEN UNDER STRESS?

poor — good — outstanding control

Table B-1
Zero-Order Correlations for AOC Sample

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 Aviation Qualification Test	—	.383	.169	-.061	.521	.502	.370	.251	.238	.148	.138	.032	-.033	.091	-.042	.052	.085	.057	.096
2 Mechanical Comprehension Test		—	.186	-.039	.307	.384	.337	.243	.404	.111	.110	-.018	-.065	.097	.017	.053	.096	.133	.146
3 Spatial Apperception Test			—	.014	.119	.086	.084	.135	.105	.117	.108	-.023	.007	.112	.047	.096	.113	.185	.025
4 Biographical Inventory				—	-.097	-.008	.030	.108	.096	-.076	-.047	-.007	.017	.160	.131	.158	.151	.271	.039
5 Math Exemption					—	.646	.253	.189	.233	.230	.229	-.017	-.001	.041	-.022	-.009	.025	.026	.123
6 Physics Exemption						—	.337	.257	.326	.136	.107	-.017	-.039	.055	-.052	.054	.085	.055	.152
7 Aviation Physiology							—	.381	.390	.118	.078	.010	.001	.164	.033	.113	.119	.146	.125
8 Aerodynamics								—	.405	.155	.120	.028	-.007	.244	.142	.257	.253	.235	.156
9 Engineering									—	.048	.060	-.062	-.034	.184	.107	.142	.153	.185	.165
10 Officer-Like Qualities										—	.917	-.045	-.046	.184	.121	.133	.127	.091	.128
11 Peer Rating											—	-.085	-.072	.193	.127	.143	.151	.105	.100
12 Instructor: Marine vs Navy												—	.578	.008	-.001	-.007	.004	-.049	-.009
13 Instructor: 1st vs 2nd Tour													—	-.044	-.004	-.050	-.059	-.033	-.049
14 Item 1 - Wings														—	.684	.806	.795	.516	.265
15 Item 2 - Motivation															—	.642	.592	.308	.146
16 Item 3 - Headwork																—	.872	.526	.212
17 Item 4 - Stress																	—	.487	.202
18 Pre-Solo Grade																		—	.307
19 Pass-Attrite																			

Table B-2

Zero-Order Correlations for OI Sample

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 Student: Marine vs Navy	—	-.254	-.149	.062	.025	-.290	-.183	-.308	-.299	-.239	.179	.122	-.123	-.019	-.109	-.072	-.122	.145
2 Aviation Qualification Test		—	.324	.130	-.071	.527	.484	.343	.368	.239	.030	.045	.055	.022	.016	.037	.058	.039
3 Mechanical Comprehension Test			—	.273	.113	.291	.398	.321	.333	.360	-.095	-.058	.074	.026	.067	.066	.125	.030
4 Spatial Apperception Test				—	.078	.022	.060	.072	.070	.097	-.045	-.053	.060	.003	.085	.078	.205	.108
5 Biographical Inventory					—	-.082	-.002	.063	.071	.168	.002	-.011	.130	.076	.115	.124	.254	.097
6 Math Exemption						—	.673	.324	.455	.237	.035	.033	.082	-.001	.040	.037	.094	.052
7 Physics Exemption							—	.388	.479	.328	.015	.026	.102	.033	.075	.076	.112	.025
8 Aviation Physiology								—	.519	.516	-.031	-.057	.197	.107	.125	.112	.256	.075
9 Aerodynamics									—	.469	-.008	.014	.151	.092	.187	.121	.241	.095
10 Engineering										—	-.086	-.061	.155	.114	.129	.102	.223	.090
11 Instructor: Marine vs Navy											—	.639	-.118	-.109	-.117	-.141	-.086	.081
12 Instructor: 1st vs 2nd Tour												—	-.095	-.008	-.102	-.092	-.048	.043
13 Item 1 - Wings													—	.677	.774	.759	.503	.166
14 Item 2 - Motivation														—	.634	.618	.321	.149
15 Item 3 - Headwork															—	.846	.498	.137
16 Item 4 - Stress																—	.482	.163
17 Pre-Solo Grade																	—	.201
18 Pass-Attrite																		